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devices for allowing computer programs or other instructions to be loaded into computer system 500. Such devices may include, for example, a removable storage unit 522 and an interface 520. Examples of such may include a program cartridge and cartridge interface (such as that found in video game devices), a removable memory chip (such as an erasable programmable read only memory (EPROM), or programmable read only memory (PROM)) and associated socket, and other removable storage units 522 and interfaces 520, which allow software and data to be transferred from the removable storage unit 522 to computer system 500.

Computer system 500 may also include a communications interface 524. Communications interface 524 allows software and data to be transferred between computer system 500 and external devices. Examples of communications interface 524 may include a modem, a network interface (such as an Ethernet card), a communications port, a Personal Computer Memory Card International Association (PCMCIA) slot and card, etc. Software and data transmitted from, e.g., the multi-synthesis backplane/bus system discussed above in FIG. 2A and transferred via communications interface 524 are in the form of signals 528, which may be electronic, electromagnetic, optical or other signals capable of being received by communications interface 524. These signals 528 are provided to communications interface 524 via a communications path (e.g., channel) 526. This path 526 carries signals 528 and may be implemented using wire or cable, fiber optics, a telephone line, a cellular link, a radio frequency (RF) link and/or other communications channels. In this document, the terms "computer program medium" and "computer usable medium" are used to refer generally to media such as a removable storage drive 580, a hard disk installed in hard disk drive 570, and signals 528. These computer program products provide software to the computer system 500. The invention is directed to such computer program products.

Computer programs (also referred to as computer control logic) are stored in main memory 508 and/or secondary memory 510. Computer programs may also be received via communications interface 524. Such computer programs, when executed, enable the computer system 500 to perform the features of the present invention, as discussed herein. In particular, the computer programs, when executed, enable the processor 510 to perform the features of the present invention. Accordingly, such computer programs represent controllers of the computer system 500.

In an aspect where the invention is implemented using software, the software may be stored in a computer program product and loaded into computer system 500 using removable storage drive 514, hard drive 512, or communications interface 520. The control logic (software), when executed by the processor 504, causes the processor 504 to perform the functions of the invention as described herein. In another aspect, the invention is implemented primarily in hardware using, for example, hardware components, such as application specific integrated circuits (ASICs). Implementation of the hardware state machine so as to perform the functions described herein will be apparent to persons skilled in the relevant art(s).

In yet another aspect, the invention is implemented using a combination of both hardware and software.

FIG. 10 is a block diagram of various example system components, in accordance with an aspect of the present invention. FIG. 10 shows a communication system 600 usable in accordance with, e.g., the multi-synthesis backplane/bus system discussed above in FIG. 2A, according to an aspect of the present invention. The communication

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system 600 includes one or more accessors 660, 662 (also referred to interchangeably herein as one or more "users") and one or more terminals 642, 666. In one aspect, data for use in accordance with the present invention is, for example, input and/or accessed by accessors 660, 664 via terminals 642, 666, such as personal computers (PCs), minicomputers, mainframe computers, microcomputers, telephonic devices, or wireless devices, such as personal digital assistants ("PDAs") or a hand-held wireless devices coupled to a server 643, such as a PC, minicomputer, mainframe computer, microcomputer, or other device having a processor and a repository for data and/or connection to a repository for data, via, for example, a network 644, such as the Internet or an intranet, and couplings 645, 646, 664. The couplings 645, 646, 664 include, for example, wired, wireless, or fiberoptic links. In another aspect, the method and system of the present invention operate in a stand-alone environment, such as on a single terminal.

FIG. 11 illustrates a flow diagram for performing a synthesis method 1100 in a modular system, in accordance with an aspect of the present invention. The method includes, among other things, providing 1102 one or more reaction cassettes, and coupling 1104 one or more reagent packs to the one or more reaction cassettes via one or more couplings. The method further includes providing 1106 one or more gaskets between adjacent cassettes and/or reagent packs to prevent leakage between the adjacent cassettes and/or reagent packs, wherein the one or more couplings include channels formed in the one or more cassettes, the one or more reagent packs and the one or more gaskets, and the channels are in communication with one another.

While this invention has been described in conjunction with the example aspects outlined above, various alternatives, modifications, variations, improvements, and/or substantial equivalents, whether known or that are or may be presently unforeseen, may become apparent to those having at least ordinary skill in the art. Accordingly, the exemplary aspects of the invention, as set forth above, are intended to be illustrative, not limiting. Various changes may be made without departing from the spirit and scope of the invention. Therefore, the invention is intended to embrace all known or later-developed alternatives, modifications, variations, improvements, and/or substantial equivalents.

What is claimed is:

1. A modular reaction system, comprising:

one or more reaction cassettes;  
one or more reagent packs coupled to the one or more reaction cassettes via one or more couplings;  
one or more mixing chambers; and  
one or more gaskets between adjacent reaction cassettes and/or reagent packs, the one or more gaskets being configured to prevent leakage between the adjacent reaction cassettes and/or reagent packs; wherein the one or more couplings consist of channels formed in the one or more reaction cassettes, the one or more reagent packs and the one or more gaskets, a plurality of the channels being in communication with one another to ensure fluid transfer, and  
the modular reaction system is configured to be releasably coupled to a computer-assisted backplane control system.

2. The modular reaction system of claim 1, wherein fluid transfer between the one or more reaction cassettes and the one or more reagent packs is pneumatically controlled.

3. The modular reaction system of claim 1, wherein each of the one or more reaction cassettes comprises at least one reaction chamber.